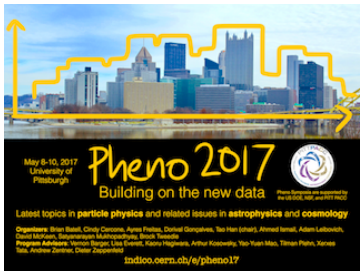

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Observational Signatures of Primordial Magnetohydrodynamical Turbulence

Monday 8 May 2017 14:00 (15 minutes)

Observations show that galaxies have magnetic fields with a component that is coherent over a large fraction of the galaxy with field strengths of order microGauss. These fields are supposed to be the result of the amplification of initial weak seed magnetic fields of unknown nature. There are two scenarios for their origin under current discussion: a bottom-up (astrophysical) one, where the needed seed field is generated on smaller scales and, a top-down (cosmological) scenario where the seed field is generated prior to galaxy formation in the early universe on scales that are large now. In our present study we assume that seed magnetic fields have been generated in the early universe. We show that these seed fields lead to primordial magnetohydrodynamical (MHD) turbulence development. We will discuss different classes of turbulence, its evolution, and observational signatures including gravitational waves, effects on cosmic microwave background, large scale structure formation, and others.

Summary

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